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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,941	06/29/2001	Yechiel Yochai	07072-141001 / EMC-01-036	9331
22494	7590	03/16/2004	EXAMINER	
DALY, CROWLEY & MOFFORD, LLP SUITE 101 275 TURNPIKE STREET CANTON, MA 02021-2310			PORTKA, GARY J	
			ART UNIT	PAPER NUMBER
			2188	6

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/895,941

Applicant(s)

YOCHAI ET AL.

Examiner

Gary J Portka

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-11 are presented for examination.

Specification

2. In the specification at page 3, Applicant is requested to update the status of the application listed to show "now U.S. Patent 6,611,896 B1".

Claim Objections

3. Claims 1, 10, and 11 are objected to because of the following informalities: The limitation "n" is not apparently specifically defined in the disclosure and therefore may be taken to be any reasonable number. Therefore, as examples "n" which include 0, 1, or all of the physical devices may be interpreted therefrom. Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-11 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mason, Jr. et al., U.S. Patent 6,112,257, in view of Saether et al., U.S. Patent 5,333,315.

7. As to claims 1 and 11, Mason discloses the recited method of optimizing system physical device response time including collecting statistics for the physical devices (see Figs. 5E, 5I, 5K, 5P, 5T, etc.), determining the n most active devices (since the table records the activity for each drive, it determines to the extent claimed which are the n most active, see also Fig. 4B item 230), for each of those devices adjusting a mirror service policy associated with one or more logical volumes to reduce seek time (Fig. 3, also Fig. 4B item 236).

Alternatively, it might be asserted that the claim limitation "determining ... the n most active of the physical devices" requires the positive determination of some number "n" of the most active devices. Mason, Jr. does make a determination of the n most active logical volumes (see col. 5 lines 16-21), but not of the n most active physical devices. Since the n most active logical volumes are the ones most directly affecting performance, it makes the most sense to determine what they are and yet minimize the amount of table space and other resources required to process the mirroring adjustment by not processing all, including perhaps dormant logical volumes, to achieve this. Additionally, it was well known at the time that monitoring the load of and balancing amongst physical devices would benefit overall system performance, see Saether col. 6 lines 21-45. The movement of files amongst disks to improve performance as taught by

Saether is analogous to the adjustment of mirror service policy used by Mason, Jr., because the latter changes the disks that are accessed in a similar manner, except that files need not be moved as in Saether since copies thereof already exist at the mirrors. Thus the teaching that physical devices should be monitored and balanced for optimum performance, combined with the teaching that using the n most active elements most directly optimizes without overextending processing and storage required therefor, would have motivated an artisan to determine the n most active devices in Mason, Jr. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the n most active devices, because it was known that the device should be monitored for load balancing to increase performance, and balancing across the most n elements provides more efficient optimization.

8. As to claims 2 and 10, the combination of Mason, Jr. and Saether teaches the invention substantially as described above with regard to claims 1 and 11; it also includes the recited utilization and threshold, since Mason, Jr. teaches these elements and the combination teaches their use with respect to physical devices.

9. As to claims 3-9, the combination of Mason, Jr. and Saether includes the recited limitations to the extent claimed, or they are obvious variations thereof.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patent No:

6,611,896 B1 Mirror policy minimizing seek for non-mirrored devices.

6,061,761 Load balancing based on logical volume and drive activity.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J Portka whose telephone number is (703) 305-4033. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gary J Portka
Primary Examiner
Art Unit 2188



March 15, 2004